Table H. Preterm birth rates by State: United States and each State, 1990 and 2002

State	Percent 2002	Percent 1990	Percent change	State	Percent 2002	Percent 1990	Percent change
United States	12.1	10.6	14	Nebraska	11.8	8.5	38
				Nevada	13.0	11.1	17
Alabama	15.8	13.1	20	New Hampshire	9.5	6.8	40
Alaska	9.8	9.0	10	New Jersey	12.0	10.7	12
Arizona	12.6	10.2	23	New Mexico	12.6	11.0	14
Arkansas	12.7	12.5	2	New York	11.4	10.7	7
California	10.2	9.8	4	North Carolina	13.3	12.5	7
Colorado	12.0	9.6	26	North Dakota	11.3	8.3	37
Connecticut	10.1	8.9	13	Ohio	12.2	10.6	15
Delaware	13.6	11.1	23	Oklahoma	12.6	10.1	25
District of Columbia	14.6	20.7	–29	Oregon	9.7	8.0	21
Florida	13.0	11.6	12	Pennsylvania	11.4	10.3	11
Georgia	12.6	12.8	–1	Rhode Island	11.3	9.6	18
Hawaii	13.7	10.0	37	South Carolina	14.2	12.3	16
Idaho	10.4	8.7	19	South Dakota	11.3	8.9	26
Illinois	12.6	11.4	10	Tennessee	13.8	12.6	10
Indiana	12.5	9.9	26	Texas	13.3	11.2	18
Iowa	11.6	8.7	33	Utah	10.5	8.7	21
Kansas	11.0	9.5	16	Vermont	9.0	7.1	27
Kentucky	13.6	10.5	30	Virginia	11.8	11.0	7
Louisiana	15.1	13.9	8	Washington	9.6	8.4	15
Maine	10.1	7.6	33	West Virginia	13.4	9.9	35
Maryland	12.9	11.2	15	Wisconsin	10.9	9.2	19
Massachusetts	10.6	7.7	37	Wyoming	11.7	10.3	14
Michigan	11.9	10.7	11				
Minnesota	9.8	8.1	21				
Mississippi	17.2	15.1	14				
Missouri	13.0	10.7	21				
Montana	11.3	8.5	34				

NOTE: Preterm is defined as less than 37 completed weeks of gestation.

were reported for 1994–95 (6.7). Hyaline membrane disease/RDS is a frequent cause of morbidity in preterm infants (92). Risk factors include early gestational age, poorly controlled maternal diabetes, multiple births, and fetal asphyxia (91). Elective (vs. spontaneous) delivery before labor for early-term infants (gestational ages 37 and 38 weeks) may also be a risk factor for RDS, possibly due to lung immaturity (93).

Since 1989 the rate for meconium aspiration syndrome (1.3 in 2002) has slowly decreased (from 3.2); the rate for anemia for the current year (1.0) was half the 1989 rate (2.0).

Congenital anomalies

In 2002 rates for the 21 malformations/groups of malformations listed on the birth certificate were essentially unchanged from 2001. Among the most commonly reported specific anomalies, cleft lip/palate was reported at a rate of 78.5 per 100,000 births. The rate of clubfoot was 59.6 per 100,000; the rate of Down's syndrome was 46.7. Research using birth certificate data has corroborated a positive association between maternal smoking and certain birth defects, including cleft lip/palate and clubfoot (94,95).

Congenital anomalies remain the leading cause of infant deaths in the United States (83). They also cause structural and functional defects, metabolic disorders, and disability (96). Congenital anomalies are reported on the birth certificates of 49 States and the District of Columbia, accounting for more than 99 percent of births in 2002 (**table 49**).

Congenital anomalies are underreported on the birth certificate; however, birth certificate data may be a valuable resource for exploratory or corroborative studies (94). Many anomalies are hard to detect at birth, which limits early ascertainment and complete reporting. The most serious and/or apparent anomalies are more likely to be identified and reported prior to hospital discharge (97). The congenital anomalies reported on birth certificates are rare events. Since a small change in the number of anomalies reported can result in a relatively large change in rates, caution should also be used in comparing yearly rates for a specific anomaly.

Rates for certain anomalies differ widely with maternal age (**table 49**). For example, in 2002 as in past years, rates for omphalocele/gastroschisis are highest for infants of mothers under age 20 years; rates for Down's syndrome and heart malformations are highest for infants of mothers over 34 years of age.

Since 1992 there has been a nationwide effort to prevent neural tube defects (NTDs), such as spina bifida and anencephalus, by encouraging increased intake of folic acid among women of childbearing age (98). Since 1998 there has been mandatory fortification of all cereal and grain products with folic acid (98); increased folate use among women of childbearing age has been reported (99).

The rate for the NTD spina bifida/meningocele in 2002 was 20.0 per 100,000 births; the rate for anencephalus was 9.9, unchanged from 2001. However, trends show significant declines in the rates for these conditions between 1996 (prefortification) and 2001 (98). Recent reports suggest that healthy prepregnancy weight may protect against NTDs and certain other birth defects (100), and that multivitamin supplementation may also protect against defects other than NTDs (101).

Oral clefts

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Source: https://www.industrydocuments.ucsf.edu/docs/zmmj0001

Table 49. Live births with selected congenital anomalies and rates by age of mother, by race of mother: Total of 49 reporting States and the District of Columbia, 2002

[Rates are number of live births with specified congenital anomaly per 100,000 live births in specified group]

Congenital anomaly and race of mother	All births[1]	Congenital anomaly reported	Age of mother							Not stated[2]
			All ages	Under 20 years	20–24 years	25–29 years	30–34 years	35–39 years	40–54 years	
All races[3]										
Anencephalus	3,993,973	391	9.9	13.4	10.6	7.9	9.7	8.9	*	28,613
Spina bifida/Meningocele	3,993,973	793	20.0	21.6	22.6	19.1	19.0	17.4	*	28,613
Hydrocephalus	3,993,973	892	22.5	27.5	24.2	21.6	17.9	24.6	27.1	28,613
Microcephalus	3,993,973	219	5.5	6.8	5.3	5.0	5.0	5.8	*	28,613
Other central nervous system anomalies	3,993,973	881	22.2	27.5	21.6	22.2	19.9	21.5	31.1	28,613
Heart malformations	3,993,973	5,152	129.9	118.6	120.6	124.4	131.7	148.8	228.7	28,613
Other circulatory/respiratory anomalies	3,993,973	5,222	131.7	124.5	125.7	125.3	132.1	150.9	200.6	28,613
Rectal atresia/stenosis	3,993,973	329	8.3	8.7	8.3	6.4	8.0	12.1	*	28,613
Tracheo-esophageal fistula/Esophageal atresia	3,993,973	430	10.8	8.5	9.8	9.5	12.3	14.6	*	28,613
Omphalocele/Gastroschisis	3,993,973	1,203	30.3	61.3	42.5	19.6	13.4	16.6	23.1	28,613
Other gastrointestinal anomalies	3,993,973	1,432	36.1	38.3	38.6	33.5	32.2	37.8	59.2	28,613
Malformed genitalia	3,993,973	3,433	86.6	87.4	84.1	83.3	91.5	84.5	105.3	28,613
Renal agenesis	3,993,973	612	15.4	16.0	13.8	15.2	16.9	15.2	*	28,613
Other urogenital anomalies	3,993,973	4,036	101.8	94.2	96.7	97.8	108.1	110.6	128.4	28,613
Cleft lip/palate	3,993,973	3,114	78.5	86.0	86.9	77.2	68.5	72.0	99.3	28,613
Polydactyly/Syndactyly/Adactyly	3,993,973	3,259	82.2	102.6	89.9	77.4	73.8	74.0	82.3	28,613
Clubfoot	3,993,973	2,363	59.6	68.1	67.3	56.7	53.5	51.6	69.2	28,613
Diaphragmatic hernia	3,993,973	479	12.1	10.3	12.5	12.2	10.7	13.6	20.1	28,613
Other musculoskeletal/integumental anomalies	3,993,973	9,077	228.9	265.4	249.3	213.3	213.2	211.9	254.8	28,613
Down's syndrome	3,993,973	1,850	46.7	25.6	22.8	27.0	41.3	107.5	360.2	28,613
Other chromosomal anomalies	3,993,973	1,253	31.6	24.4	25.1	24.2	27.7	54.8	138.4	28,613
White										
Anencephalus	3,151,479	306	9.8	11.2	10.0	8.7	9.8	10.2	*	22,660
Spina bifida/Meningocele	3,151,479	646	20.6	23.7	22.6	21.0	18.9	18.1	*	22,660
Hydrocephalus	3,151,479	705	22.5	23.0	25.0	22.5	18.2	25.0	27.5	22,660
Microcephalus	3,151,479	176	5.6	*	5.4	5.1	5.5	5.5	*	22,660
Other central nervous system anomalies	3,151,479	705	22.5	29.2	22.2	22.3	20.2	21.7	30.0	22,660
Heart malformations	3,151,479	4,069	130.0	121.3	120.7	122.2	132.6	148.5	227.3	22,660
Other circulatory/respiratory anomalies	3,151,479	4,139	132.3	131.1	130.0	125.5	129.9	144.3	197.3	22,660
Rectal atresia/stenosis	3,151,479	274	8.8	8.9	8.6	6.9	8.2	13.4	*	22,660
Tracheo-esophageal fistula/Esophageal atresia	3,151,479	360	11.5	8.9	10.6	9.8	12.9	16.2	*	22,660
Omphalocele/Gastroschisis	3,151,479	956	30.6	92.0	45.6	19.1	12.5	14.5	*	22,660
Other gastrointestinal anomalies	3,151,479	1,131	36.1	39.4	36.6	33.7	33.0	38.7	63.7	22,660
Malformed genitalia	3,151,479	2,906	92.9	96.9	91.9	89.9	96.5	87.8	106.2	22,660
Renal agenesis	3,151,479	514	16.4	15.8	15.9	16.2	17.3	15.6	*	22,660
Other urogenital anomalies	3,151,479	3,324	106.2	101.9	101.3	100.6	112.6	115.3	127.4	22,660
Cleft lip/palate	3,151,479	2,668	85.3	97.6	96.3	85.6	74.0	71.9	97.4	22,660
Polydactyly/Syndactyly/Adactyly	3,151,479	1,902	60.8	65.4	61.1	60.1	58.6	61.5	64.9	22,660
Clubfoot	3,151,479	2,048	65.5	78.9	73.6	63.2	58.1	55.2	76.2	22,660
Diaphragmatic hernia	3,151,479	394	12.6	9.5	13.9	13.5	10.1	14.3	*	22,660
Other musculoskeletal/integumental anomalies	3,151,479	5,691	188.3	211.6	204.2	174.1	183.6	175.9	196.1	22,660
Down's syndrome	3,151,479	1,602	51.2	29.6	24.2	29.7	45.4	115.3	383.4	22,660
Other chromosomal anomalies	3,151,479	1,029	32.9	24.6	26.7	25.4	28.6	55.2	142.4	22,660

See footnotes at end of table.

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Source: https://www.industrydocuments.ucsf.edu/docs/zmmj0001

Table 49. Live births with selected congenital anomalies and rates by age of mother, by race of mother: Total of 49 reporting States and the District of Columbia, 2002—Con.

[Rates are number of live births with specified congenital anomaly per 100,000 live births in specified group]

Congenital anomaly and race of mother	All births[1]	Congenital anomaly reported	Age of mother							Not stated[2]
			All ages	Under 20 years	20–24 years	25–29 years	30–34 years	35–39 years	40–54 years	
Black										
Anencephalus	593,180	62	10.5	*	12.9	*	*	*	*	2,781
Spina bifida/Meningocele	593,180	122	20.7	*	26.3	*	24.4	*	*	2,781
Hydrocephalus	593,180	145	24.6	39.4	21.2	19.1	*	*	*	2,781
Microcephalus	593,180	28	4.7	*	*	*	*	*	*	2,781
Other central nervous system anomalies	593,180	119	20.2	19.7	20.1	20.6	*	*	*	2,781
Heart malformations	593,180	788	133.5	108.9	113.6	145.8	147.2	178.9	242.8	2,781
Other circulatory/respiratory anomalies	593,180	673	114.0	90.2	94.5	114.9	136.6	183.1	175.8	2,781
Rectal atresia/stenosis	593,180	35	5.9	*	*	*	*	*	*	2,781
Tracheo-esophageal fistula/Esophageal atresia	593,180	40	6.8	*	*	*	*	*	*	2,781
Omphalocele/Gastroschisis	593,180	187	31.7	53.5	27.4	24.3	22.2	*	*	2,781
Other gastrointestinal anomalies	593,180	207	35.1	31.0	40.3	35.3	26.5	*	*	2,781
Malformed genitalia	593,180	317	53.7	57.3	52.1	47.1	57.2	58.3	*	2,781
Renal agenesis	593,180	71	12.0	*	*	*	*	*	*	2,781
Other urogenital anomalies	593,180	403	68.3	60.1	64.0	71.4	75.2	66.6	*	2,781
Cleft lip/palate	593,180	239	40.5	37.6	48.5	30.9	32.8	43.7	*	2,781
Polydactyly/Syndactyly/Adactyly	593,180	1214	205.6	210.4	209.1	195.9	218.2	187.3	192.6	2,781
Clubfoot	593,180	224	37.9	42.3	47.0	28.7	30.7	*	*	2,781
Diaphragmatic hernia	593,180	69	11.7	*	*	*	*	*	*	2,781
Other musculoskeletal/integumental anomalies	593,180	2529	428.4	401.0	416.7	417.5	458.6	459.8	619.6	2,781
Down's syndrome	593,180	163	27.6	*	16.0	15.5	23.3	79.1	293.0	2,781
Other chromosomal anomalies	593,180	145	24.6	23.5	20.7	16.9	22.2	47.9	*	2,781

* Figure does not meet standards of reliability or precision; based on fewer than 20 births in the numerator.

[1] Total number of births to residents of areas reporting specified congenital anomaly.

[2] No response reported for the congenital anomalies item.

[3] Includes races other than white and black.

NOTES: Excludes data for New Mexico, which did not report congenital anomalies. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget guidelines. In this table all women (including Hispanic women) are classified only according to their race; see "Technical Notes."

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Source: https://www.industrydocuments.ucsf.edu/docs/zmmj0001